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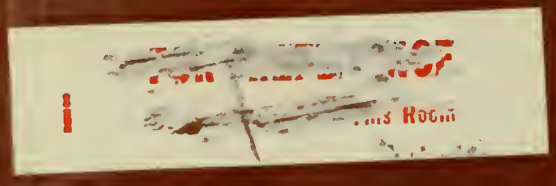

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Thesis

A COMPARISON OF TWO METHODS OF TEACHING SPELLING

Submitted by

Catherine C. Brady

(B. S. in Education, Muhlenberg College, 1937)

In Partial Fulfillment of Requirements for the

Degree of Master of Education

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Many investigations have been conducted, and much has been written pertaining to methods of teaching spelling, yet no one method has been acclaimed superior. Teachers and parents still complain about poor spelling. Many students in high school and college are deficient in the ability to spell.

THE PROBLEM

Statement of the Problem. It is the purpose of this study to compare the spelling of two groups of fifth grade pupils who have been taught by two different methods. The methods used were a flash card method using a selected word list, and the Newlon-Hanna[1] Method. The latter is the method in general use throughout the school district in which this study was made.

Importance of the Study. The pupils concerned in this experiment are given reading instruction in ability groups instead of on grade levels. In spelling the reverse is true. Reading levels ranged from a readiness third grade to an advanced fifth grade. It was evident that a fifth grade

1. Jesse H. Newlon and Paul R. Hanna, The Newlon-Hanna Speller, Grade Five. (New York: The Houghton Mifflin Company, 1933), pp. vii-xi.

spelling list for all concerned was causing discouragement for some and dawdling for others. Using a word list within the pupils' reading ability, and presented by a method which would enforce attention, seemed worthy of trial.

Durrell[1] suggests combining the teaching of reading and spelling since a close relationship exists between them.

Betts[2] says,

> In the elementary school, do not expect spelling achievement to exceed general level of reading ability as measured by means of an informal reading inventory for which a well-graded series of readers is used.

Concerning the use of flash cards Hildreth[3] says, "The method capitalizes quick visualization, holds attention, and helps to isolate the words for study".

Aims of the Study. This study is an attempt to measure (1) achievement in spelling; (2) visual perception; (3) auditory discrimination, and (4) to study sex differences in achievement in these same areas.

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1. Donald D. Durrell, Improvement of Basic Reading Abilities, Yonkers, New York: World Book Company, 1940, p. 267.
2. Emmett A. Betts, "War Time Needs in Spelling", The National Elementary Principal, 22:109, February, 1943.
3. Gertrude Hildreth, Learning the Three R's. Philadelphia: Educational Publishers, Inc., 1936, p. 798.

DEFINITIONS OF TERMS USED

Flash card method as used this study, means a short-exposure method of presenting words to be studied in spelling, on flash cards printed in manuscript.

Visual perception, as defined by Spache,[1] is "...attention to the visual characteristics of words, figures, and digits...". This definition is used in this study.

Auditory discrimination is the ability to notice likenesses and differences in the sounds of words.

1. George Spache, "Spelling Disability Correlates", Journal of Educational Research, 34:119, October, 1941.

CHAPTER II

REVIEW OF THE LITERATURE

A wide field of research exists dealing with the various factors operating in what Spache[1] terms "the syndrome known as spelling disability". A brief review will follow of the conclusions of investigators with reference to certain of these factors.

Visual imagery. Tidyman[2] suggests that the basic method used in spelling should be a visual presentation since visual learners are in the majority. Horn[3] agrees, and states,

> The emphasis in presenting the word should be put upon visual imagery. Not only have studies of types of imagery shown that children of the elementary school period are predominantly visual, but the direct investigation of the relative efficiency of various methods of learning to spell has quite uniformly revealed that visual presentation is an essential part of methods which give superior results. Poor spellers are relatively deficient in using visual imagery.

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1. George Spache, "Spelling Disability Correlates", Journal of Educational Research, 34:561, April, 1941.

2. Willard Tidyman, The Teaching of Spelling, Yonkers, New York: World Book Company, 1922, p. 37.

3. Ernest Horn, "Principles of Method in Teaching Spelling as Derived from Scientific Investigation", Eighteenth Yearbook of the National Society for the Study of Education, Part 2. Bloomington, Illinois: Public School Publishing Company, 1919, p. 65.

The value of the flash card presentation has been studied by several investigators. Such a study was made by Gilbert[1] whose purpose was to learn whether study in spelling can be speeded. His study demonstrated "...that teaching by flash cards with a limited length of exposure has definite value in cutting down perceptual time". Comparing the flash card method of teaching spelling with the study-test method in grades two and three, McCarthy[2] found a difference of 7.68 in favor of the flash card method in grade two, and a significant difference of 14.66 in favor of the flash card method in grade three. Mundy[3], on the other hand, found no significant gains of the one method over the other in her comparison of the flash card method with the Newlon-Hanna method. She offers as the conclusion to her study, "...it might be stated that as far as the subjects of this experiment are concerned, it is apparent that they would learn as efficiently by the one method as by the other".

1. L. C. Gilbert, "Experimental Investigation of a Flash-Card Method of Teaching Spelling", Elementary School Journal, 32:337-51, January, 1932.

2. Mary G. McCarthy, "Comparison of the Flash Card Method of Teaching Spelling with the Study-Test Method in Grades Two and Three", (Unpublished Master's Thesis, Boston University, School of Education, Boston, 1937), pp. 39-40.

3. Rita Carolyn Mundy, "Comparison of the Flash Card Method of Teaching Spelling with the Newlon-Hanna Method in Grades Four and Five", (Unpublished Master's Thesis, Boston University, School of Education, Boston, 1937), pp. 55-56.

Suzzalo[1] recommends the use of flash cards in teaching spelling because he says that the flash card enforces full attention, and compels the learner to visualize quickly and accurately. In agreement with him is Hildreth[2] who says,

> Flash card exercises are not only highly pleasing to children, but as a spelling device, they are highly effective. The method capitalizes quick visualization, holds the attention, and helps to isolate the words for study.

Other investigators likewise stress the importance of a basic visual presentation of the word to be studied. Gates[3] calls inadequate acquaintance with the visual form of the word the commonest cause of misspelling. Speaking of the method of teaching spelling, Foran[4] says,

> Principally, ..., spelling is a perceptual form of learning and the methods of teaching it should be based on this fact so that the instruction may stress the visual apprehension of the word rather than its articulation, although all modes of expression may become knit together to form the knowledge of the whole word.

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1. Henry Suzzalo, The Teaching of Spelling. Boston: Houghton Mifflin Company, 1913, p. 77.

2. Gertrude Hildreth, Learning the Three R's. Philadelphia: Educational Publishers, Inc., 1936, p. 798.

3. Arthur I. Gates, The Psychology of Reading and Spelling with Special Reference to Disability. Teachers College, Contributions to Education, No. 129. New York: Teachers College, Columbia University, 1922, p. 86.

4. Thomas George Foran, The Psychology and Teaching of Spelling. Washington: Catholic Education Press, 1934. p. 205.

Hartman[1] studied twenty-four best spellers, eighteen poorest, and twenty-one average ones, centering around a median score, and selected from the results of a test of fifty selected words appearing in both the Thorndike and Horn word books. Studying the relative influence of visual and auditory factors in ability to spell, he found that "To use the language of Gestalt, good spellers perceive total configuration of the verbal sort with greater facility than others".

Auditory discrimination. That auditory discrimination or the ability to perceive likenesses and differences in the sounds of words, plays an important part in spelling, is confirmed by the following statements of those pursuing investigations in the field.

Dolch[2] says, "Poor sound images of words in perhaps the greatest handicap in spelling". It is Durrell's[3] opinion that a pupil should be able to spell the essential parts of a word by listening to it, even though the word may not be spelled phonetically. Spache[4] writes, "There is sufficient evidence to conclude that auditory discrimination plays a

1. George W. Hartman, "The Relative Influence of Visual and Auditory Factors in Spelling Ability", Journal of Educational Psychology, 22:691-99, December, 1931.
2. Edward Dolch, Better Spelling. Champaign, Illinois: Garrard Press, 1942, p. 248.
3. Donald D. Durrell, Improvement of Basic Reading Abilities. Yonkers, New York: World Book Company, 1940, p. 270.
4. Spache, op. cit., p. 564.

causal part in spelling disabilities. The evidence is confirmed by the characteristic errors of poor spellers". Referring to the presentation of the spelling lesson, Tidyman[1] says:

> First, careful pronunciation should always precede the spelling of the word. The first pronunciation in the spelling exercise should be slow and distinct, emphasizing the syllables of the word but not destroying the unity of the auditory image.

Enrichment of meaning. It is the contention of Tidyman[2] that asking a child to learn to spell a word of unfamiliar meaning is unreasonable. Durrell[3] states, "In examining a child's spelling difficulties the first step should be to determine whether he misspells words that he does not know or that carry little meaning or motivation for him". Hollingworth[4] found that children produced about sixty-six and two-thirds more misspellings when writing words the meaning of which they were either ignorant or uncertain, than they did when writing words with known meanings. Dolch[5] says, "If the meaning is not known, the word as a whole will be forgotten and therefore the spelling also". Again he gives the view

1. Tidyman, op. cit., p. 45.
2. Tidyman, op. cit., p. 47.
3. Durrell, op. cit., p. 270.
4. Leta S. Hollingworth, The Psychology of Special Disability in Spelling. Teachers College, Contributions to Education, No. 88. New York: Teachers College, Columbia University, 1918, p. 57.
5. Dolch, op. cit., p. 148

that the child should think of the spelling period"...principally as word study".

Sex differences in spelling achievement. That sex is a factor not to be overlooked in the syndrome of spelling disability, has been pointed out by certain investigations. Spache[1] notes that a sex difference does exist by the fact that the majority of his own spelling disability cases were boys. Horn[2] says, "Girls consistently spell better than boys, and this difference increases with grade". A survey in spelling made by Nifenecker[3] showed that girls were not only definitely and consistently superior, but also that their scores varied less. Girls' scores were 81 per cent as variable as the boys'. Baker[4] reports that in a study of sixty cases in remedial teaching, 39 were boys.

It is evident from the literature that auditory and visual discrimination are factors which affect spelling achievement, and that various teaching methods may produce different results. This study is an attempt to measure achievement when the auditory and visual factors are stressed and the method is adjusted to the learner.

1. George Spache, "Spelling Disability Correlates, II-Factors that May Be Related to Spelling Disability", Journal of Educational Research, 35:125, October, 1941.
2. Horn, op. cit., p. 63.
3. Eugene A. Nifenecker, Measurement in Spelling. Board of Education, New York City, 1918, p. 70.
4. Harry J. Baker, Educational Disability and Case Studies in Remedial Teaching. Bloomington, Illinois: Public School Publishing Company, 1929, p. 15.

CHAPTER III

PLAN OF STUDY

The problem. This study was made to compare the achievement in spelling of fifth grade pupils taught by flash card method, using a selected word list, with children taught the Newlon-Hanna.[1]

The background. The study was conducted within the public school system of a small city situated in the heart of the Anthracite Coal Region of Pennsylvania.

The school population is made up of pupils of a variety of racial backgrounds. The children in the control group were descended mainly from Italian forebears. Those in the experimental group represented eight different racial strains, with no one predominating.

The control group was taught by a member of the faculty of the Locust Street Elementary School. The experimental group was taught by the writer in the Poplar Street School. In both schools, the classes are grouped homogeneously, and departmentalized from third grade on through eighth.

The plan followed. The study was prefaced by the administration of five tests. The pupils, eighty-four in number,

1. Jesse H. Newlon and Paul Hanna, The Newlon-Hanna Speller, Grade Five. New York: The Houghton Mifflin Company, 1933, pp. vii-xi.

were tested first by the Kuhlmann-Anderson[1] Intelligence Test for grade five, to ascertain approximate mental ages. Using the results thus obtained, forty-two pupils from the Locust Street class were matched according to mental ages with forty-two pupils from the Poplar Street fifth grade. Boys were matched with boys; girls were matched with girls. When the matching was completed, there were twenty-five boys and seventeen girls in each group.

Table I shows the mean mental and chronological ages.

TABLE I

MEAN CHRONOLOGICAL AND MENTAL AGES

Group	No.	Mean C.A.	S.D.	Mean M.A.	S.D.
Experimental	42	125	5.96	128.3	13.7
Control	42	125.1	6.31	129.3	11.6

The range in mental ages in the control group was from eight years, six months to thirteen years, one month, with a mean of ten years, eight months. In the experimental group the range of mental ages was from eight years, six months, to thirteen years, five months, with a mean of ten years, nine months. Both groups averaged above normal mentally.

1. Published by Educational Test Bureau.

The spelling list for grades four and up, from the Durrell Analysis of Reading Difficulty[1] was then given, followed by the Stanford Achievement Test in Spelling,[2] Form E.

Tests of visual memory and of auditory discrimination were devised by the writer. There were two sets of each test, one for the beginning of the study; one for the end. The test of visual memory consisted of fifteen words selected from the Durrell-Sullivan Reading Vocabularies for Grades Four, Five, and Six.[3] Each word was flashed for five seconds. The pupils were asked to write the word as they recalled it. Only correct spelling was given credit. A copy of the test may be found in the Appendix.

The test of auditory discrimination consisted of twelve words selected from the same source. An attempt was made to present phonetic words. The pupil listened as the word was pronounced, and then tried to write it as it sounded to him. Scoring was done on the basis of the number of essential sounds reproduced. A copy of the test may be found in the Appendix.

With the data from the various tests collected and studied, the two groups began a period of instruction which lasted three months. The control group proceeded as usual

1. Published by World Book Company.

2. Published by World Book Company.

3. Donald D. Durrell, Improvement of Basic Reading Abilities. Yonkers, New York: World Book Company, 1940, pp. 569-588.

studying according to the Newlon-Hanna Method[1]. They were not grouped.

The words used with the experimental group were taken from the vocabulary accompanying the reading being done at the time in the regular reading class. Since the reading was taught in groups, this necessitated group spelling lessons. The experimental groups, therefore, fell into four sections. One group was on a fifth grade reading level; one group was on an advanced fourth grade reading level; one group was on a beginning fourth grade level. The lowest group was reading third grade material.

A list of twenty words was made up each week from those words which would form the vocabulary work of the reading classes during that same week. The bulk of the meaning enrichment, therefore, took place during the reading period. Five words per day were taught by the use of flash cards. Each day, the five words taught the previous day, were reviewed in content form. On the fifth day, the entire twenty words were given in test form. The pupils charted their progress.

The flash card method as used in this study was as follows:

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1. Newlon and Hanna, op. cit., pp. 2-3.

1. The word to be studied was presented in manuscript, on a card measuring four and one half inches by eighteen inches.

2. The word was flashed for ten seconds. The teacher pronounced the word clearly, and asked the pupils to prohounce it after her.

3. The pupils wrote the word.

4. The card was turned over again for the pupils to check their spelling. If the word was found to be correct, the pupils covered their first copy and wrote the word twice more. If the word was misspelled, the pupils wrote it correctly.

5. After the five words for the day had been thus presented, they were combined with easy words into a sentence. This was dictated to the class. The sentence was checked, and then written twice more without referring to the first copy.

Since the spelling was an outgrowth of the reading, special emphasis was placed, during the period of the study, on those exercises in the reading area which pertained to word study. Finding base words in derived words, dividing words into syllables, building words from the base word, dividing compound words, and proof-reading were exercises frequently used. For those pupils who showed a weakness in auditory discrimination, exercises were given to strengthen

this power.

Throughout the period of the study, the pupils were encouraged to keep in mind their individual problems in spelling, and to work toward overcoming their special disabilities. In all written work, they were urged to become spelling conscious, and to proof-read carefully.

At the end of the three months' period, both the control group and the experimental group were retested for achievement. With the exception of the spelling list taken from the Durrell Analysis of Reading Difficulty,[1] different forms of the tests given in January were used.

1. Published by World Book Company.

CHAPTER IV

ANALYSIS OF DATA

The data were analyzed to compare:

1. Achievement on two standard spelling tests
2. Visual perception
3. Auditory discrimination
4. Sex differences in achievement in these same factors

Table II shows the mean scores for the two groups on the Durrell Spelling List given in January.

TABLE II

MEAN SCORES ON THE DURRELL SPELLING LIST IN JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D	C.R.
Experimental	42	9.97	.62	4.02	.57	.96	.596
Control	42	9.40	.73	4.74			

The mean for the experimental group was 9.97 words compared with 9.40 words for the control group. The critical ratio of .596 showed no significant difference in achievement between the two groups.

Table III shows the mean scores for the two groups on the same test after three months' teaching.

TABLE III

MEAN SCORES ON THE DURRELL SPELLING LIST IN APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	14.35	.54	3.51	3.64	.86	4.23
Control	42	10.71	.67	4.38			

The mean score for the experimental group in April was 14.35 words as compared with 10.71 words for the control group. The critical ratio of 4.23 words shows a statistically significant difference in favor of the experimental group.

Table IV shows the mean scores of the boys on the Durrell Spelling List in January.

TABLE IV

ACHIEVEMENT OF BOYS ON THE DURRELL SPELLING LIST IN JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	9.28	.77	3.84	.48	1.28	.375
Control	25	8.80	1.02	5.09			

The mean score of the experimental group was 9.28 words compared with 8.80 words in the control group. There was no significant difference shown by the critical ratio of .375.

Table V shows the mean scores of the boys after the teaching period.

TABLE V

ACHIEVEMENT OF BOYS ON THE DURRELL SPELLING LIST IN APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	14.20	.70	3.50	4.08	1.17	3.48
Control	25	10.12	.94	4.68			

The mean score of the boys on the Durrell Spelling List was 14.20 words. The mean of the control group was 10.12 words. The critical ratio of 3.48 showed a statistically significant difference in favor of the experimental group.

Table VI shows the mean scores of the girls on the Durrell Spelling List at the beginning of the experiment.

TABLE VI

ACHIEVEMENT OF GIRLS ON THE DURRELL SPELLING LIST IN JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	10.35	.99	4.10	0		
Control	17	10.35	.96	3.96			

The mean for both groups was 10.35.

Table VII shows the girls' mean scores after three months' teaching.

TABLE VII

ACHIEVEMENT OF GIRLS ON THE DURRELL SPELLING LIST IN APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	14.41	.90	3.72	2.83	1.27	2.23
Control	17	11.59	.90	3.72			

The mean of the experimental group was 14.41 words compared with 11.59 words in the control group. The critical ratio of 2.23, favoring the experimental group, is not statistically significant. The chances are 96 in a hundred that the difference is a true one in favor of the girls in the experimental group.

Table VIII shows the mean scores of both groups on the Stanford Achievement Test in Spelling, Form E, given in January.

TABLE VIII

ACHIEVEMENT OF TOTAL GROUP ON THE STANFORD ACHIEVEMENT TEST, FORM E IN JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	30.0	1.37	8.88	2.07	2.21	.94
Control	42	27.93	1.74	11.28			

The mean of the experimental group was 30.0 words compared with 27.93 words for the control group. The critical ratio of .94 showed no significant difference between the two groups.

Table IX shows the mean scores of both groups on the Stanford Achievement Test in Spelling, Form F, given in April.

TABLE IX

ACHIEVEMENT OF TOTAL GROUP ON THE STANFORD ACHIEVEMENT, FORM F IN APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	36.21	1.18	7.65	5.01	1.94	2.58
Control	42	31.20	1.54	9.95			

The mean for the experimental group was 36.21 words compared with 31.20 words for the control group. The critical ratio of 2.58 is not statistically significant. There are 97 chances in 100 that this is a true difference in favor of the experimental group.

Table X shows the mean scores of the boys on the Stanford Achievement Test in Spelling, Form E.

TABLE X

ACHIEVEMENT OF BOYS ON THE STANFORD ACHIEVEMENT TEST, FORM E

Group	No.	Mean	S. E. M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	28.32	1.60	8.01	2.88	2.84	1.01
Control	25	25.44	2.35	11.75			

The mean score of the experimental group was 28.32 words compared with 25.44 for the control group. The critical ratio of 1.01 shows no statistically significant difference between the two groups. There are 68 chances in 100 that this is a true difference in favor of the experimental group.

Table XI shows the mean scores of the boys on the Stanford Achievement Test in Spelling, Form F, given in April.

TABLE XI

ACHIEVEMENT OF BOYS ON THE STANFORD ACHIEVEMENT TEST, FORM F

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	34.68	1.47	7.35	5.64	2.59	2.18
Control	25	29.04	2.13	10.65			

The mean of the experimental group was 34.68 words compared with 29.04 words for the control group. The critical ratio of 2.18 is not statistically significant. There are 96 chances in 100 that this is a true difference in favor of the

experimental group.

Table XII shows the mean scores of the girls on the Stanford Achievement Test in Spelling, Form E, given in January.

TABLE XII

ACHIEVEMENT OF GIRLS ON THE STANFORD ACHIEVEMENT TEST FORM E

Group	No.	Mean	S. E. M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	32.46	2.30	9.50	.87	3.25	.268
Control	17	31.59	2.30	9.44			

The mean of the experimental group was 32.46 words compared with a mean of 31.59 words for the control group. The critical ratio of .268 showed no significant difference between the two groups.

Table XIII shows the mean scores of the girls on the Stanford Achievement Test in Spelling, Form F, given in April.

TABLE XIII

ACHIEVEMENT OF GIRLS ON THE STANFORD ACHIEVEMENT TEST, FORM F

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	38.46	1.84	7.57	4.05	2.63	1.54
Control	17	34.41	1.89	7.81			

The mean of the experimental group was 38.46 words compared with 34.41 words for the control group. The critical ratio of 1.54 was not significant. There are 86 chances in 100 that this is a true difference in favor of the experimental group.

Table XIV shows the mean scores of both groups on the test of visual memory given in the month of January.

TABLE XIV

VISUAL MEMORY TEST-TOTAL GROUP-JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	5.76	.51	3.33	.28	.67	.42
Control	42	5.48	.44	2.87			

The mean for the experimental group was 5.76 words compared with 5.48 words for the control group. The critical ratio of .42 showed no significant difference in the groups.

Table XV shows the mean scores of both groups on the visual memory test given in April.

TABLE XV

VISUAL MEMORY TEST-TOTAL GROUP-APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	10.12	.45	2.91	2.05	.609	3.37
Control	42	8.07	.41	2.67			

The mean score for the experimental group was 10.12 words compared with 8.07 words for the control group. The critical ratio of 3.37 showed a significant difference in favor of the experimental group.

Table XVI shows the mean scores of the boys' on the visual memory test given in January.

TABLE XVI

VISUAL MEMORY TEST OF BOYS-JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	5.28	.59	2.97	.56	.80	.70
Control	25	4.72	.54	2.71			

The mean for the experimental group was 5.28 words compared with 4.72 for the control group. The critical ratio of .70 showed no significant difference between the two groups.

Table XVII shows the mean scores of the boys on the visual memory test given in April.

TABLE XVII

VISUAL MEMORY TEST OF BOYS-APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	9.92	.61	3.07	2.72	.78	3.49
Control	25	7.20	.50	2.44			

The mean of the experimental group was 9.92 words compared with 7.20 words for the control group. The critical ratio of 3.49 showed a significant difference favoring the boys in the experimental group.

Table XVIII shows the mean scores of the girls on the visual memory test given in January.

TABLE XVIII

VISUAL MEMORY TEST OF GIRLS-JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	6.47	.89	3.68	.06	1.12	.054
Control	17	6.53	.68	2.79			

The mean score of the girls of the experimental group was 6.47 compared with 6.53 for the control group. The critical ratio of .054 showed no significant difference.

Table XIX shows the mean scores of the girls' groups for the visual memory test given in April.

TABLE XIX

VISUAL MEMORY TEST OF GIRLS-APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	10.18	.83	3.43	1.18	1.08	1.09
Control	17	9.00	.69	2.83			

The mean of the experimental group was 10.18 words compared with 9.00 words for the control group. The critical ratio of 1.09 was not significant. There are 72 chances in 100 that this is a true difference in favor of the girls in the experimental group.

Table XX shows the mean scores on the test of auditory discrimination given in January for the total group.

TABLE XX

AUDITORY DISCRIMINATION SCORES-TOTAL GROUP-JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	6.02	.56	3.60	1.81	.81	2.23
Control	42	4.21	.59	3.83			

The mean score of the experimental group was 6.02 words compared with 4.21 words for the control group. The critical ratio of 2.23 showed the difference was not statistically significant. There are 97 chances in 100 that it is a true

difference in favor of the experimental group.

Table XXI shows the mean scores of the test of auditory discrimination given the total group in April.

TABLE XXI

AUDITORY DISCRIMINATION SCORES-TOTAL GROUP-APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	42	9.33	.42	2.71	3.66	.77	4.75
Control	42	5.67	.65	4.22			

The mean score of the experimental group was 9.33 words compared with a mean of 5.67 words for the control group. The critical ratio of 4.75 showed a statistically significant difference favoring the experimental group.

Table XXII shows the mean scores of the boys on the auditory discrimination test given in January.

TABLE XXII

AUDITORY DISCRIMINATION SCORES OF BOYS-JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	5.16	.63	3.15	1.56	.96	1.62
Control	25	3.60	.73	3.64			

The mean score of the experimental group was 5.16 words compared with 3.60 words for the control group. The critical ratio of 1.62 was not statistically significant. There are 88 chances in 100 that the difference is a true one.

Table XXIII shows the mean scores of the boys on the test of auditory discrimination given in April.

TABLE XXIII

AUDITORY DISCRIMINATION SCORES OF BOYS-APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	25	9.04	.50	2.49	3.84	.97	3.96
Control	25	5.20	.83	4.17			

The mean of the experimental group was 9.04 words compared with 5.20 words for the control group. The critical ratio of 3.96 showed a significant difference favoring the experimental group.

Table XXIV shows the mean scores of the girls on the test of auditory discrimination given in January.

TABLE XXIV

AUDITORY DISCRIMINATION SCORES OF GIRLS-JANUARY

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	7.35	.82	3.37	2.30	1.22	1.88
Control	17	5.05	.90	3.72			

The mean of the experimental group was 7.35 words compared with 5.05 words for the control group. The critical ratio of 1.88 was not statistically significant.

Table XXV shows the mean scores of the girls on the test of auditory discrimination given in April.

TABLE XXV

AUDITORY DISCRIMINATION SCORES OF GIRLS-APRIL

Group	No.	Mean	S.E.M.	S.D.	M^1-M^2	S.E.D.	C.R.
Experimental	17	9.82	.77	3.16	3.47	1.26	2.75
Control	17	6.35	1.0	4.11			

The mean of the experimental group was 9.82 words compared with 6.35 words for the control group. The critical ratio of 2.75 was not statistically significant. There are 99 chances in 100 that it is a true difference in favor of the experimental group.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of the study was to compare achievement in spelling in the fifth grade when a selected word list was taught using the flash card method of teaching with the spelling taught by the Newlon-Hanna method.

There were eighty-four children in two fifth grades, forty-two in each group. The intelligence was determined by the Kuhlman Anderson Mental Test for Grade Five. Achievement in spelling was measured by two forms of the Stanford Achievement Spelling Test, and the Spelling Test of the Durrell Analysis of Reading Difficulty. Informal tests of visual and auditory discrimination devised by the writer were used. The experimental teaching began in January, and continued through April. The words for the experimental group were selected from the Durrell List and from the regular reading work of the group. The children in the control group followed the regular work outlined in the Newlon-Hanna book.

The data was analyzed to compare achievement in spelling in each group. Sex differences in achievement were studied also.

Conclusions

1. All of the differences in achievement were in favor of the experimental group. The critical ratio of 4.23 on the Durrell Test showed a significant difference. The critical ratio of 2.56 on the Stanford Test showed that there are 98 chances in 100 that the difference was a true difference.

2. The difference in achievement for the boys on the Durrell test was significant, the critical ratio being 3.46. The critical ratio on the Stanford Test was 1.01. The chances are 68 in 100 that this is a true difference.

3. The difference in the girls score on the Durrell test was 14.41 for the experimental group compared with 11.59 for the control group. The critical ratio of 2.23 showed 97 chances in 100 that the difference was a true difference.

4. The visual memory test showed significant differences for the total group and for the boys.

5. Significant differences on the auditory test were shown for the total group and for the boys.

6. From the results of this study it would seem that using the flash card method of teaching, and selecting words from the reading work is superior to other methods for boys at the fifth grade level.

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APPENDIX

TEST OF VISUAL MEMORY

DIRECTIONS I am going to show you a number of words. You will have a very short time in which to study the word. When I turn down the card, write the word as you remember it.

Time of exposure--5 seconds
(Only exact spelling counted correct)

SET I

mourning	plague
nasturtium	persuade
unconscious	jaundice
gourd	chamois
audience	anxious
affectionate	delicious
scenery	rheumatism

cipher

SET II

hearse	rogue
jonquil	liquid
disguise	courier
besiege	abyss
surveyor	cylinder
pneumatic	scientist
solemnity	deficiency

doubtless

TEST OF AUDITORY DISCRIMINATION

DIRECTIONS I am going to give you a list of words to spell. The words are new to you. Listen closely while I pronounce each one. Then try to write the word exactly as it sounded to you.

(Scoring is done in terms of the presence in each word of the essential sounds).

SETI

investigate	uncomfortable
fertilizer	venerable
transparent	porcupine
blustering	astonishment
uncomplaining	customary
veranda	opportunity

SET II

instantly	marvelous
sacrifice	decorate
conversation	energetic
laboratory	obtainable
triangular	territory
scandalizing	investigation

EXPERIMENTAL GROUP WORD LISTS

GROUP I

accident	balloon	committee	declaration
accomplish	bargain	company	decoration
accumulate	blister	confident	demand
actually	brake	confusion	department
addition	brigade	congratulate	deserted
afford	brilliant	conscious	despair
announce	burst	consist	desperation
annoy	business	consternation	discourage
annoyance	bustling	container	discussion
anxious	celebration	continuing	disposition
apparent	center	control	distance
argument	chimney	conversation	district
assure	chose	council	divided
attraction	cinders	counting	double
audience	circumstances	create	drilled
autograph	cistern	crew	easier
available	combined	danced	eaves

GROUP I (Continued)

eight	gauge	intelligent	ordinary
election	glance	intense	original
engineer	glimpse	interest	otherwise
enormous	gradual	knoll	pace
entertain	guilty	language	package
entrance	hesitate	main	parallel
envy	horizon	marble	particular
equal	horizontal	mayor	perched
escape	huddled	measure	persuade
examine	husband	mechanic	picket
exhausted	immediately	multiply	piece
expectation	immense	napkin	pitcher
expensive	implements	necessity	pleasure
famous	impulse	nervous	predicament
fascinate	incredibly	nonsense	preferred
fee	independence	notice	pressure
fertile	indifferent	nudge	principal
flourish	indignation	occur	process
frighten	initials	occupy	professor
fringe	instead	operate	property

GROUP I (Continued)

propped
prosper
protect
provide
public
pure
rambling
realize
recognize
regret
released
reliable
relief
rescue
reserved
resist
retort
satisfaction
scarcely
scene
seldom
series
site
splendid
sprawling
square
stalwart
standard
storage
straight
sturdy
successful
suddenly
suitable
superior
surged
swiftly
system
telephone
tender
thoroughly
threaten
trough
truthful
underneath
uniform
vertical
vision
volunteer
voters
weigh
weight

GROUP II

accompany	breakfast	country	everyone
accurate	breath	court	except
admire	bundle	creature	excitedly
admit	buzzing	current	explore
adventure	canyon	curve	expression
afterwards	captain	damage	famous
ancestors	capture	dangerous	figure
angel	carved	dictionary	finish
anxious	catalog	different	flashed
apron	caught	difficulty	flush
astonished	certainly	direction	foreign
attack	cheered	dismount	forge
attention	chosen	display	forward
autumn	Christmas	distant	fresh
balance	churning	domesticate	friendly
beautiful	circle	donation	furnish
beaver	climate	drawer	gallop
believe	coasting	dusk	general
blacksmith	coil	easily	gentle
brave	committee	encyclopedia	government

GROUP II (Continued)

gown	lessons	permission	really
grease	library	piece	refresh
guess	loudest	pitched	refuge
harness	magic	plainly	relatives
hatch	mansion	plaster	remain
headache	meant	platform	remember
heavy	message		restless
human	miserable	plot	roared
hungry	moment	porcupine	saddle
imagine	mountain	possible	safely
important	mouth	prayer	sandwich
information	music	probable	second
insisted	neighbors	problem	seldom
island	orchard	promise	sense
jewels	outcome	protect	separate
lamb	package	quarrel	shepherd
lean	pause	quarrelsome	shoulders
learned	peeked	quiet	skillful
least	penjuin	quite	slapped
leather	perfect	rapidly	slight

GROUP II (Continued)

smoothly	thoughtless
solemn	thousand
special	thrust
splendid	thunder
spoiled	touch
spreading	travel
staring	tribe
statement	trinket
stockade	troublesome
straight	uneasy
strength	unusual
studying	usually
stupid	value
sulphur	vegetable
supply	violent
swallow	voyage
swiftly	waiting
swimming	warpath
swollen	whisper
terrible	worried

GROUP III

acquainted	bound	decided	faraway
adventures	braids	determined	fastened
advertise	bristles	different	favorite
agree	busily	disappear	feathers
agreeable	butcher	disappoint	finish
alarmed	carding	dismal	flash
already	carefully	donate	flooring
announce	circle	double	forgotten
appear	claim	dozen	formed
ashamed	collected	dye	freckles
astir	combed	dyeing	frightened
banished	complained	earliest	fullest
bearable	contented	earth	furnish
beauty	continually	eleven	further
because	continued	enough	general
beneath	corduroy	entered	growl
blaze	crooked	equal	grunted
blizzard	crowded	exactly	hammering
blossom	curiosity	explore	hauling
bottom	decayed	families	heart

GROUP III (Continued)

herbs
hero
hides
hinges
hollow
hood
hundred
hurrying
imagination
important
indigo
interpret
instruct
invite
kettle
knot
leaped
length
lilting
lively
lodge
lumber
machine
magic
measure
neither
nonsense
November
oldfashioned
ourselves
partner
peddlar
person
pieces
pigeon
pile
piled
pioneer
pleasant
plenty
pointed
polite
possible
power
powder
prayer
predict
preferred
prepare
pretend
promise
quarrel
quarter
quiver
ready
receive
removed
reply
satisfy
satisfied
scarcely
scared
screech
search
season
secret
sense
settle
several
shadow
sharpen
shear
shrink
sickness
silently
skein
speechless
spinner
square
squeal

GROUP III (Continued)

squeezed	trousers
steadily	twenty
steady	twice
stealing	twinkled
stew	underbrush
strange	understand
streak	unhappy
stretched	upright
struck	usual
stubborn	valley
substance	visitors
succotash	voices
tallow	wait
teased	warned
teasing	whip
terrible	winter
torrent	wrapped
touch	written
trail	yelping
tramp	young

GROUP IV

acting	breakfast	early	forgot
afraid	brother	eight	friend
afternoon	brought	enjoyed	friendly
again	buck	enough	front
against	captain	even	garden
almost	catch	ever	gay
always	cattle	every	golden
among	climbing	everything	grass
animal	colored	everyone	graze
another	could	exciting	great
answered	course	expected	grew
asked	counting	fastened	ground
autumn	crack	fault	happen
basket	cross	feeling	happening
beautiful	crowd	fellow	happy
believe	declare	fire	hard
belonged	delighted	fixed	headed
best	didn't	floated	heard
bigger	dressed	floor	heels
bones	ear	followed	here

GROUP IV (Continued)

highway	letter	pleased	shivers
himself	life	pony	shouted
hundred	listened	proudest	sign
hungry	maybe	pulled	slap
hurt	mean	queer	smells
hurry	mends	question	smile
important	middle	ranch	smooth
inside	minute	range	someday
isn't	months	rascal	sorry
jolly	morning	reach	sounded
kitchen	move	really	stars
knee	moving	remember	started
knew	much	riding	station
later	never	saddle	such
laughs	north	seconds	suddenly
lazy	once	shall	summertime
learn	only	shiny	surprise
learning	over	shook	sure
leaves	pasture	should	talking
left	piece	show	their

GROUP IV (Continued)

these
thinking
thought
through
threw
tired
tracks
trouble
turned
turning
twice
two
under
until
upper
very
voice
waited
wanted
wasn't
watched
week
whatever
when
where
which
while
white
wildfire
wished
without
wondered
wonderful
worked
workout
would
yellow
yesterday
yours
yourself

LESSONS TAKEN FROM THE NEWLON-HANNA SPELLER, GRADE FIVE

LESSONS V19-V30 INCLUSIVE

separate	longer	explore	desert	loss
raising	stock	flock	area	match
workman	bigger	herd	reach	basement
pound	gallon	greatest	rather	remove
machine	mostly	tiger	carrying	risk
labor	baker	native	method	clearing
farming	barrel	missed	dates	cigar
growing	bale	whistle	storm	cellar
easier	crush	beast	sweat	death
slave	effort	lion	shift	scream
losing	buying	canoe	windy	crime
import	shipped	photograph	wherever	protect
picking	shipping	escape	forms	pump
pile	mix	elephant	path	punish
servant	mass	sport	improve	matter
paying	dollars	spear	rolling	inspect
invent	eaten	snake	palm	instant
perfect	dried	shooting	lonely	problem
pour	acre	tribe	lonesome	ladder
surprise	ton	monkey	midst	chimney

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NEWLON-HANNA WORDS (Continued)

likewise	southern	natural	medal	nurse
liked	boundary	remaining	object	maid
someone	northern	cool	objects	couple
ourselves	tip	act	opened	husband
letting	eastern	largely	parade	hotel
rude	mild	frozen	places	mouse
polite	lower	ruined	showed	canary
laughed	zone	ashamed	ware	eagle
remark	farther	grab	weave	clown
kindest	division	selfish	attract	detective
language	difference	spare	guest	hammer
main	limit	guilty	holding	fund
position	comfort	solid	highly	lodge
countries	common	split	honor	purse
mighty	central	standing	point	diamond
join	adventure	perhaps	stunt	boss
member	moving	wander	style	bonnet
equal	apart	region	besides	sword
satisfy	pleasing	timber	getting	puddle
knowing	aim	leaving	otherwise	turnip

NEWLON-HANNA WORDS (Continued)

cheap	factory	possible	finish
heat	coming	miles	inch
power	once	don't	recall
wheel	charge	shut	
minute	damage	wrote	
doctor	smooth	edge	
entire	market	raise	
supply	plenty	says	
can't	clothes	said	
gather	won't	color	
meant	country	early	
colony	piece	newspaper	
although	gift	shoes	
merry	spoke	public	
cabin	friends	cottage	
parties	birthday	copies	
wool	celebrate	quarrel	
jewelry	done	anybody	
cotton	chain	learned	
material	speed	easy	
none	already	interest	
different	writing	money	
clothing	automobile	since	

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